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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,541	02/23/2004	John Sinko	1406.17406-PROV FOR CIP	7750
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EXAMINER ZHENG, LOIS L				
ART UNIT 1793		PAPER NUMBER		
MAIL DATE 09/03/2008		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/784,541

**Applicant(s)**

SINKO, JOHN

**Examiner**

LOIS ZHENG

**Art Unit**

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 13-16 and 27-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 July 2008 has been entered.

### ***Status of Claims***

2. Claims 1, 7, 9-10 are amended in view of applicant's amendment filed 14 July 2008. Claim 12 is canceled. Claims 13-16 and 27-36 remain withdrawn from consideration. Therefore, claims 1-11 are currently under examination.

### ***Priority of Claims***

3. The cation species Li(I), La(III), and Pr(III) as recited in claim 1 are not disclosed in parent application 10/138,794. The metal ion cation species and the solubility as recited in claim 1 is not disclosed in provisional application 60/288,895. The scope of instant claim 1 is broader than the scope of the parent application 10/138,794 and the provision application 60/288,895. Therefore, instant claims 1-11 do not benefit from the filing date of the parent application 10/138,794 and the provision application 60/288,895. The effective filing date for the instant claims is 23 February 2004.

Base on this effective filing date, the US Patent Application Publication 2002/0197468 A1 for parent application 10/138,794 qualifies as 102(b) type of prior art

since it is published on 26 December 2002, which is more than one year before the effective filing date of the instant application.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Sinko US Patent Application Publication 2002/0197468 A1(Sinko'468).

Sinko'468 teaches a process for treating aluminum substrates with a pigment grade corrosion inhibiting composition comprising salts of di-mercapto and poly-mercapto derivatives such as DMTD and TMT, wherein the cations for the salts are metal cations such as Bi(III), Co(II), Cd(II), Ag(I), Sb(III) and Ni(II) (abstract, paragraph [0025]). Sinko'468 further teaches that the solubility of the di-mercapto derivatives is about 0.1-10mmole/l (paragraph [0049]). The corrosion inhibitor of Sinko'468 is capable of preventing corrosion for at least 2000 hours in salt spray test(Page 7,Table 17).

In addition, all other limitations as recited in claims 1-11 are also taught by Sinko'468(claims 1-12).

Therefore, Sinko'468 anticipates instant claims 1-11.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4 and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinko 6,129,610 (Sinko'610) and in view of King et al. US 4,497,719(King).

Sinko'610 teaches a process for treating aluminum with a pigment grade corrosion-inhibiting composition(col. 1 lines 16-20, col. 6 lines 24-30).

Regarding claims 1, 4, 6-11, the process as taught by Sinko'610 includes applying a coating composition comprising a material selected from di-mercapto, polymercapto and their derivatives such as DMTD and/or TMT compounds and their derivatives, and metal cations such as Zn(II), Al(III), Mg(II), Ca(II), Sr(II), Ti(IV), Zr(IV), Ce(III or IV) and Fe(II or III); drying and curing the applied coating; and subsequently coating the coated metal with paint, as recited in instant claims 1, 4, 6-12 and 17-25 (abstract; column 1, lines 16-20; column 5, lines 45-67; column 6, lines 24-31 and 51-53; column 7, lines 5-33, examples). Sinko'610 teaches the specific sulfur-containing compound claimed in instant claims 6-7, 9-10, 18-24 (column 8, lines 10-49).

However, Sinko'610 does not explicitly teach the cationic species as claimed.

King teaches metal salts of dimercapto 1,2,4-thiadiazole used in lubricants to capable of withstanding extremely high pressure and maintaining antiwear properties (col. 1 lines 7-12, abstract). King further teaches that the suitable metal for this metal salt are Cu, Zn, Co, Ni, Zr, Ag, etc.(col. 1 line 66 - col. 2 line 2, claim 4) and demonstrated different metal salt of dimercapto 1,2,4-thiadiazole in various embodiments(see examples).

Therefore, one of ordinary skill in the art would have found it obvious to have substituted the metal cations such as Zn and Zr as taught by Sinko'610 with Cu, Co, Ni and Ag as taught by King with expected success since King teaches that these metal cations are functionally equivalent in forming metal salts of dimercapto thiadiazole used to improve antiwear properties.

With respect to the amended feature that "said corrosion inhibitor is capable of preventing corrosion for at least 2000 hours in salt spray exposure conditions", Sinko'610 further teaches that is corrosion inhibiting compound is capable of preventing corrosion for 7000 hours in salt spray test(Table 13).

With respect to the claimed water solubility as recited in claims 1 and 3, even though Sinko'610 in view of King do not explicitly teach the claimed water solubility, one of ordinary skill in the art at the time that the invention was made would have found the solubility of the coating composition obvious because the composition taught by Sinko'610 in view of King is substantially the same as the composition recited in the claims. Therefore, one of ordinary skill in the art would expect that the coating composition taught by the Sinko'610 in view of King would be substantially the same as applicant's coating composition, including its solubility in water, see MPEP 2112.01. In addition, the amounts of metal DMTD as taught by Sinko'610's examples show concentrations that fall within the claimed solubility range.

With respect to the claimed coating thickness as recited in claim 2, even though Sinko'610 in view of King do not explicitly teach the claimed coating thickness, one of ordinary skill in the art at the time that the invention was made would have found the

thickness of the coating obvious because the Sinko'610 teaches the step of coating the substrate in an amount that is effective to bring about a corrosion inhibiting effect (abstract). Because one of ordinary skill in the art would know the amount that produces the corrosion inhibiting effect, one of ordinary skill in the art would find the thickness of the coating obvious in order to provide the corrosion inhibiting effect, including a thickness corresponding the known corrosion-inhibiting amount that overlaps the claimed range of thickness. See MPEP 2144.05

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sinko'610 in view of King, and further in view of Ernhoffer et al US 5,171,861(Ernhoffer).

The teachings of Sinko'610 in view of King are discussed in paragraph 7 above. However, Sinko'610 in view of King do not explicitly teach the claimed protective composition incorporated into a silane-base gel coating as claimed.

Ernhoffer teaches adding mercapto group containing organic compounds such as DMTD to a lubricant in order to improve antioxidant, antiwear and corrosion inhibiting characteristics(col. 1 line 63 – col. 3 line 2). Ernhoffer further teaches the lubricant can be synthetic oils, such as silane, employed as grease(col. 3 lines 54-65). Therefore, Ernhoffer teaches incorporating mercapto group containing organic compounds such as DMTD into a silane-based gel lubricant.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the mercapto group containing organic compounds such as DMTD in the process of Sinko'610 in view of King into a silane-based gel lubricant as taught by

Ernhoffer in order to improve antioxidant, antiwear and corrosion inhibiting characteristics of a lubricant as taught by Ernhoffer.

9. Claims 1-4 and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sinko'610 6,129,610 (Sinko'610).

The teachings of Sinko'610 are discussed in paragraph 7 above. However, Sinko'610 does not explicitly teach the cationic species as claimed.

Looking at the periodic table, Zn and Cd are both in column 12 of the periodic table, one of ordinary skill in the art would have found it obvious to have substituted Zn cation of Sinko'610 with Cd cation with expected success since they belong to the same group of metals and one of ordinary skill in the art would have expected them to have very similar properties and functions.

The remaining claims limitations are rejected for the same reasons as set forth in paragraph 7 above.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sinko'610 in view of Ernhoffer et al US 5,171,861(Ernhoffer).

The teachings of Sinko'610 are discussed in paragraph 7 above. However, Sinko'610 do not explicitly teach the claimed protective composition incorporated into a silane-base gel coating as claimed.

The teachings of Ernhoffer are discussed in paragraph 8 above.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the mercapto group containing organic compounds such as DMTD in the



process of Sinko'610 into a silane-based gel lubricant as taught by Ernhooffer for the same reasons as set forth in paragraph 8 above.

***Response to Arguments***

11. Applicant's arguments filed 14 July 2008 have been considered but they are not persuasive.

In the remarks, applicant argues that Sinko'610 does not describe corrosion inhibitor having the claimed qualities.

The examiner does not find applicant's argument persuasive because Sinko'610 teaches a corrosion inhibiting composition comprising metal salt of di-mercapto and poly-mercapto and their derivatives as claimed. Sinko'610 also teaches that its corrosion inhibiting composition is pigment grade and can be applied to aluminum surfaces. The coating produced by Sinko'610 is capable of preventing corrosion for 7000 hours in salt spray test(see paragraph 4 above). The only difference between the corrosion inhibiting composition of Sinko'610 and the instant claims is the type of metal cations used in the corrosion inhibiting composition. King teaches different types of metals, such as Cu, Zn, Co, Ni, Zr, Ag, etc., that are functionally equivalent and are suitable for metal salt of dimercapto thiadiazole used to improve antiwear properties (see paragraph 4 above). Therefore, one of ordinary skill in the art would have found it obvious to have substituted the metal cations of Sinko'610 with Co, Ni, Ag metal cations of King with expected success.

Applicant further argues that King's directed to high pressure and antiwear additives in lubrication systems and does not teach using metal salts of thiadiazole in corrosion inhibition compositions for the protection of aluminum surfaces.

The examiner does not find applicant's argument persuasive because corrosion of the metal is a result of exposing metal to open air or moisture for a long period of time. Therefore, corrosion overtime contributes to the wear and tear of the metal equipment. The examiner considers corrosion inhibition as part of antiwear properties. In addition, improved antiwear properties as taught by King would have also been desirable to the corrosion inhibiting coating composition of Sinko'610.

Applicant further argues that Ernhofter is directed to lubricants and is not pigment grade and are not suitable for organic coating applications

The examiner does not find applicant's argument persuasive because Ernhoff teaches silane gel coatings may contain thiadiazole derivatives. Therefore, one of ordinary skill in the art would have the thiadiazole derivative containing corrosion inhibiting composition of Sinko'610 to also be suitable for silane gel coatings.

12. The declaration under 37 CFR 1.132 filed 14 July 2008 is insufficient to overcome the rejection of claims 1-12 based upon Sinko'610 in view of King, or further in view of Ernhoff as set forth in the last Office action because: The declaration merely reiterated applicant's arguments discussed in applicant's remarks filed 14 July 2008. The response to these arguments can be found in paragraph 11 above.

**Conclusion**

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kinlen US 2004/0035498 A1 teaches a corrosion inhibiting composition comprising substantially the same DMTD material and metal cations as Sinko'610.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Supervisory Patent Examiner, Art  
Unit 1793

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